SCIENCE, AERONAUTICS AND TECHNOLOGY

FISCAL YEAR 2001 ESTIMATES

BUDGET SUMMARY

ACADEMIC PROGRAMS **MINORITY UNIVERSITY RESEARCH AND EDUCATION PROGRAM**

SUMMARY OF RESOURCES REQUIREMENTS

	FY 1999 OPLAN 12/23/99	FY 2000 OPLAN REVISED	FY 2001 PRES BUDGET	Page Number
		(Thousand of Dollars)		
Historically Black Colleges and Universities	36,200	35,871	28,000	SAT 7.2-10
University Research Center Awards				
Institutional Research Awards	300	1,500	1,500	
Principal Investigator Awards	5,500	4,900	3,200	
Math and Science Education Awards	17,900	20,894	16,400	
Partnership Awards	12,500	8,577	6,900	
Enterprise Program Funding *	[17,200]	[17,200]	[20,900]	
Other Minority Universities	30,700	17,900	17,900	SAT 7.2-16
University Research Center Awards				
Institutional Research Awards	400			
Principal Investigator Awards	3,000	3,500	3,000	
Math and Science Education Awards	18,100	11,300	12,300	
Partnership Awards	9,200	3,100	2,600	
Enterprise Program Funding *	[11,600]	[11,600]	[15,300]	
Total Minority University Research Programs	66,900	53,771	45,900	
Total Enterprise Program Funding *	[28,800]	[28,800]	[36,200]	
Total Program Funding to Minority University Research	95,700	82,571	82,100	

* Represents funding included in Enterprise budget request in support of Minority University Programs

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BUDGET SUMMARY

ACADEMIC PROGRAMS **MINORITY UNIVERSITY RESEARCH AND EDUCATION PROGRAM**

	FY 1999 OPLAN 12/23/99	FY 2000 OPLAN REVISED	FY 2001 PRES BUDGET
		(Thousands of Dollars)	
Distribution of Program Amount by Installation			
Ames Research Center (ARC)	2,526	1,579	1,626
Dryden Flight Research Center (DFRC)	2,119	1,256	1,212
Goddard Space Flight Center (GSFC)	21,633	27,708	20,431
Jet Propulsion Laboratory (JPL)	2,634	1,764	819
Johnson Space Center (JSC)	3,553	1,672	1,921
Kennedy Space Center (KSC)	5,992	3,234	3,138
Langley Research Center (LaRC)	3,260	1,100	1,000
Glenn Research Center (GRC)	13,376	5,239	5,865
Marshall Space Flight Center (MSFC)	7,344	6,300	6,150
Stennis Space Center (SSC)	2,613	1,742	1,480
Headquarters (HQ)	1,850	2,177	2,258
Total	66,900	53,771	45,900

PROGRAM GOALS

The Minority University Research and Education Programs (MUREP) focus primarily on expanding and advancing NASA's scientific and technological base through collaborative efforts with Historically Black Colleges and Universities (HBCU) and Other Minority Universities (OMU), including Hispanic-Serving Institutions (HSI) and Tribal Colleges and Universities (TCU), hereafter referred to as Minority Institutions (MI). NASA's outreach to MI's in FY 2001 will build upon the prior years' investments in MI research and academic infrastructure. Through sufficient infrastructure-building support, exposure to NASA's unique mission and facilities, and involvement in competitive peer review and merit selection processes annually, MI's will be able to contribute significantly to the Agency's strategic goals and objectives. These contributions include the education of a more diverse resource pool of scientific and technical personnel who will be well prepared to confront the technological challenges to benefit NASA and the Nation. In addition to the Federal mandates for MI's, the strategic goals that guide NASA's MUREP are: (1) To foster research and development activities at MI's which contribute substantially to NASA's mission; (2) To create systemic and sustainable change at MI's through partnerships and programs that enhance research and educational outcomes in NASA-related fields; (3) To prepare faculty and students at MI's to successfully participate in the conventional, competitive research and education process;

and (4) To increase the number of students served by MI's to enter college and successfully pursue and complete degrees in NASA-related fields.

STRATEGY FOR ACHIEVING GOALS

NASA employs a comprehensive and complementary array of strategies to achieve these goals for MI's. These strategies include: (1) Working closely with NASA Strategic Enterprises, other government agencies, and interested parties to develop new research and education collaborations and partnerships; (2) Encouraging and providing opportunities for faculty to conduct NASA research early in their careers; (3) Providing incentives for students to enter and remain in mathematics, science and technology disciplines; (4) Establishing measurable program goals and objectives; and (5) Developing and implementing evaluations to assess the effectiveness and outcomes of the programs and financial performance, and thereby improving program delivery and results.

A strategy used to expand MI involvement in competitive peer review processes and to ensure the relevance of research conducted by MI's is to involve NASA Strategic Enterprises early in the development of solicitation notices. Once Headquarters issues the notices, NASA Centers provide advice to prospective grantees, conduct peer reviews of proposals, and provide funding recommendations to the Office of Equal Opportunity Programs (OEOP) and the Strategic Enterprises. After Headquarters makes the selections, the research is returned to the nominating NASA Center(s) or Jet Propulsion Laboratory (JPL) for grant award and/or technical management of the award. OEOP provides policy direction and program oversight. Oversight of the research performed at MI's is conducted by the Strategic Enterprises in collaboration with OEOP. In addition, all MUREP requests for continuation funding are assessed for performance by the NASA Technical Officers and all awards funded for more than 2 years receive on-site reviews.

The successful deployment of these strategies has resulted in the establishment of five different programmatic award categories which apply equally to the HBCU and OMU Programs. These programmatic initiatives are carried out in close collaboration with NASA Strategic Enterprises and Centers/JPL. Strategic Enterprises and Centers/JPL support the MUREP through direct funding, use of their facilities, and commitment of their personnel to serve on Technical Review Committees (TRC) and assist in other facets of program implementation. University Research Centers (URC) and Institutional Research Awards (IRA) receive technical guidance and annual on-site reviews by TRC's. The awards for Principal Investigator (PI), Mathematics, Science, and Engineering (MSE), and Partnerships are managed predominately by personnel at the NASA Centers/JPL. As a result of the involvement of the Strategic Enterprises and NASA Centers/JPL in the MUREP, numerous students and PI's from MI's are knowledgeable about and make significant contributions to the Nation's space program.

In FY 2001, the existing awards in all five programmatic award categories will be maintained. Outreach to MI's will continue to be made in collaboration with the Strategic Enterprises and Centers/JPL to ensure that MI's are knowledgeable of and responsive to the Agency's Strategic Plan. OEOP will continue to set specific program goals that lead to measurable program outcomes that are consistent with the Agency's investment in MI's. These award categories are:

• **University Research Center (URC) Awards** achieve a broad-based, competitive aerospace research capability among the Nation's MI's that will: foster new aerospace science and technology concepts; expand the Nation's base for aerospace research and development; develop mechanisms for increased participation by faculty and students in mainstream research; and increase the productivity of students (who are U.S. citizens and who have historically been underrepresented) with advanced degrees in NASA-related fields. Funding is provided by the Strategic Enterprises. In order to foster closer ties between the URC's and NASA, a Lead

NASA Center is designated for each URC and is responsible for directly managing the URC cooperative agreements and for increasing MI involvement in ongoing NASA research and development activities. Collaborations with other NASA Centers, industry, and other universities continue to be strongly encouraged. OEOP continues to maintain responsibility for program policy and oversight. The URC's have formed a National Alliance of NASA University Research Centers (NANURC). This Alliance has established a National Conference of the University Research Centers, created pathways for developing greater collaborations between the URC's, and is exploring avenues for increasing the number of advanced degrees being awarded to disadvantaged students. NASA is strongly supportive of this concept and is actively working with the Alliance to further develop and strengthen their organization.

• **Institutional Research Awards (IRA)** improve academic, scientific and technology infrastructure and broaden the NASA-related science and technology base at MI's. Two awards with different focus areas have been made under this category. The first IRA (Research) award was made in FY 1994 and was limited to only OMU's. These awards provide OMU's with an opportunity to provide a quality learning and research environment in NASA-related areas. The second IRA (Network Resources and Training Sites [NRTS]) was open to all MI's. The IRA (NRTS) award is designed to improve the in-house capability to electronically access science data and computational resources; to develop mechanisms to support, sustain and evolve the network infrastructure of the targeted universities and colleges; and to make MI's more effective in the competitive process for NASA and other science, engineering and technology funding opportunities. IRA awards provide for the acquisition of research equipment and equipment essential to Internet connectivity. The strategies for achieving the IRA (NRTS) goals include: (1) Establishing lead NRTS's; (2) Holding them accountable for providing internet connectivity to other MI's and public schools; and (3) Training students, faculty, and teachers to build computers and effectively utilize the Internet to compliment teaching and research collaborations and delivery. The lead NASA Center, Goddard Space Flight Center (GSFC), manages the IRA (NRTS) under the auspices of GSFC's Minority University - Space Interdisciplinary Network (MU-SPIN) Program. The Office of Equal Opportunity Programs (OEOP), Office of Space Science, and Office of Earth Science collaboratively provide funding and oversight for the GSFC MU-SPIN Program. NASA Strategic Enterprises, NASA Centers, and JPL support IRA programs through direct funding, use of their facilities, and commitment of their personnel to serve on Technical Review Committees (TRC) and assisting in other facets of program implementation. Students and principal investigators involved in IRA (NRTS) spend time on-site at the Centers/JPL throughout the year.

• **Principal Investigators (PI) Awards** provide faculty, who have limited NASA experience, the opportunity to integrate the research and education components of their careers with the unique mission requirements of a specific NASA Center/JPL. Each fiscal year MI's are invited to submit proposals for the Faculty Awards for Research (FAR). The FAR program provides competitive, peer review selection of outstanding and promising engineering, physical and life science-tenured and tenure-track faculty who are capable of contributing to the Agency's research and education objectives. This award provides faculty members with research support and exposure to the NASA peer review process to enable them to demonstrate creativity, productivity, and future promise in the transition to achieving competitive awards in the Agency's mainstream research processes. In FY 1996, these awards were expanded to include funding to involve graduate and undergraduate students in research projects.

The primary strategy for implementing the PI Awards for Research is through a competitive peer review and merit selection process in collaboration with the Strategic Enterprises and NASA Centers/JPL. Other strategies include: (1) Have discipline-related personnel at Headquarters and the NASA Centers/JPL who are responsible for serving as points-of-contact for faculty interested in pursuing an award in this category; (2) Give responsibility to the NASA Centers/JPL for conducting the technical evaluations and making selection recommendations to Headquarters for funding consideration; (3) Provide funding to the nominating NASA Center/JPL to make PI Awards for Research; and (4) Hold the NASA Center/JPL responsible for managing the awards and obtaining the research outcomes. By involving MI faculty and students in NASA research, the Agency hopes to increase the interest

of traditionally underrepresented communities in the Agency's mission and involve a broader array of America's citizenry in the NASA-sponsored research community.

• **Mathematics and Science Education (MSE) Awards** build upon these institutions' outstanding ability to provide excellence in mathematics, science, engineering and technology (MSET) training while increasing the participation and achievement of socially and economically disadvantaged and/or disabled students in MSET fields at all levels of education. Awards are made in the following three areas: undergraduate and graduate; teacher preparation and enhancement; and precollege activities.

MSE Awards contribute to the national education goals by integrating the contents from the NASA mission into the educational outreach projects at MI's. As a result, NASA contributes to the increase in the number and the strengthening of the skills, knowledge, and interest of students and teachers in mathematics-, science-, engineering-, and technology-based MSET academic programs. MSE awards consist of both unsolicited and solicited awards. The solicited awards are the NASA Precollege Awards for Excellence in Mathematics, Science, Engineering and Technology (PACE/MSET) Program and the Mathematics, Science, and Technology Awards for Teacher and Curriculum Enhancement Program (MASTAP). Both types of MSE awards are reflected in the last two subcategories.

- Undergraduate and Graduate Awards provide scholarships, fellowships, internships, and research opportunities in NASA-related fields, and other services to enhance retention and increase graduation rates. These awards are in response to Congressional direction to increase the number of individuals from underrepresented groups in the pool of graduate researchers. Students must be U.S. citizens and must pursue degrees in NASA-related fields. During the academic year and/or summer, students are required to conduct research relevant to their fields of study at a NASA Center, on a university campus, at a Federal laboratory, or in the aerospace industry. It is expected that these students will form part of the pool from which NASA selects graduate researchers and/or employees.

- Teacher Preparation and Enhancement Awards provide opportunities for MI's to develop diverse and exemplary research-based mathematics, science, technology and geography teacher education curricula that are integrated with content from NASA's mission. It is the Agency's desire that the results will contribute to the participating states' efforts to increase the numbers and percentage of state-certified mathematics, science, technology or geography teachers employed in hard-to-staff elementary, middle and secondary schools not normally served by NASA.

- Precollege Awards offer opportunities for MI's, in collaboration with NASA and local school districts, to provide informal educational opportunities that will enhance the numbers and percentage of students enrolled in mathematics and science college preparatory courses. As a result of participating in these awards, students will gain awareness of career opportunities in MSET fields and exposure to NASA's mission and scientific and technical personnel role models and will enter college pursuing NASA-related career fields.

In FY 1999, additional funding of $10M was included in the FY 1999 Appropriation Bill for VA-HUD-Independent agencies for the Science, Engineering, Mathematics and Aerospace Academy (SEMAA) to replicate the training at ten other sites. These ten sites will be funded through FY 2000. In FY 2001 a competitive solicitation will be offered to merit select new SEMAA sites at minority institutions. The new solicitation will continue the current focus on aero-space, but will be expanded to include curricula related to the other three NASA strategic enterprises of Earth Science, Space Science, and Human Exploration and Development of Space.

• **Partnership Awards** were expanded in FY 1999 and in response to Congressional direction to "expand opportunities and enhance diversity in the NASA sponsored research and education community…achieve a balance between the proportion of NASA funding received by minority institutions of higher education and other institutions of higher education." These awards include (1) Partnership Awards for Innovative and Unique Education and Research (IUER) Projects and (2) Partnership Awards for the Integration of Research into Undergraduate Education (PAIR). The Partnership Awards (IUER) are awarded to MI's in three categories: research, education, or training. These projects strengthen partnerships with NASA Centers and MI's, are innovative and unique, and have potential for long-term support from other sources. The PAIR awards have an inter-disciplinary focus that spans more than one MSET academic program, creating a collaborative effort among different academic departments. To extend the inter-disciplinary focus, the MI's are strongly encouraged to demonstrate in their proposals partnerships with NASA Centers/JPL, with other institutions of higher education, and with the aerospace community. In FY 2000, additional funding of $5.0M was included in the FY 2000 Appropriations Bill for VA-HUD-Independent Agencies for the Partnership Awards Program. The across-the-board, 0.38 percent rescission resulted in this $5.0M being reduced to $4.577M. This funding enabled NASA to continue its efforts to enhance collaboration among MSET academic departments, thereby strengthening the MSET baccalaureate degree-producing capacity of a number of the Nation's HBCU's and OMU's by building upon previous NASA funding. As a result, the outcomes of partnership awards are: (1) innovative interdisciplinary study among MSET academic programs that center on NASA-related course study, research, and technological applications, including collaborative efforts within MSET academic departments; (2) more competitive undergraduate U.S. students, underrepresented in MSET fields who, because of their research training and exposure to cutting-edge technologies, are better prepared to enter MSET graduate programs or MSET employment; (3) enhanced undergraduate courses and curricula including laboratory-based curricula that foster collaborative educational experiences between faculty members and students leading to institutional faculty development efforts; and (4) model HBCU's and OMU's that integrate NASA-related research into the appropriate areas of the undergraduate curriculum that expose greater numbers of students and faculty to the Agency's cutting-edge technologies. In FY 2001, each NASA Strategic Enterprise will become more involved in Partnership Awards made through Centers.

SCHEDULE & OUTPUTS

MUREP metrics are continually being improved. Performance data measuring participation and program outcomes is obtained through the required submission of annual performance reports and/or on-site or reverse-site reviews of each grant. Each award recipient submits an annual performance report that is reviewed by a NASA Technical Monitor or a Technical Review Committee for qualitative and quantitative progress toward the project's and NASA's program goals and objectives. Continuous assessment of this data has enabled OEOP MUREP to identify performance measures for research and education awards. As part of the grantee's annual reporting requirements, each awardee is now being required to respond to a set of uniform research or education outcomes that enables OEOP to assess progress across all research or education awards. The Uniform Outcomes Report was also designed to avoid duplication of reporting requirements by serving as the grantees' annual performance report. Additionally, as required by Executive Order 12876 for HBCU's, Executive Order 12900 for Educational Excellence for Hispanic Americans (EEHA), and Executive Order13021 for TCU's, at the end of each fiscal year NASA measures its performance against the concluding fiscal year plans that were submitted to the White House Initiative Offices and the Office of Management and Budget. The measures of performance include the number of awards and funding to HBCU's, EEHA's, and TCU's in the following categories: research and development; program evaluation; training; facilities and equipment; fellowships, internships, traineeships, recruitment and IPA's; student tuition assistance, scholarships, and other aid; direct institutional subsidies; third-party awards; private-sector involvement; and administrative infrastructure.

The objectives are to establish uniform outcomes for all NASA MUREP awards and provide compact instruments for uniform collection of data keyed to those outcomes. This process reduces the collection of data to the minimal amounts possible, emphasizes outcomes, and is applicable to any common set of awards. The data collected can be aggregated both horizontally and longitudinally, permits adjustable benchmarking standards to be applied, and is collected electronically over the World Wide Web. A single annual collection of data is used to provide the information necessary for comparative and correlational analysis across research or education projects and information contained in the annual MUREP performance reports, including those required by the White House Initiative Offices on HBCU's, EEHA's, and TCU's. Based on prior years' evaluation results, the following uniform measures of performance have been established for OEOP MUREP research and education awards.

RESEARCH MEASURES OF PERFORMANCE (for URC's, IRA's, PI's, and Partnership (Research) Awards)

- Participants - students, faculty, post-doctoral researchers, research associates supported
- Student Outcomes - degrees awarded, post-graduation plans
- Research Outcomes – referred papers, technical presentations, patents, commercial products, research funds leveraged from other sources

EDUCATION AND TRAINING MEASURES OF PERFORMANCE (for MSE's and Partnership (Education) Awards)

- Participants - students, teachers supported
- High School Student Outcomes - enrollment in Mathematics, Science, Education and Technology (MSET) courses, graduation, enrollment in college, and selection of MSET majors
- Bridge Student Outcomes - completed freshman year in college
- Undergraduate & Graduate Student Outcomes - degrees awarded, post-graduation plans
- Teacher Outcomes - received certificates

IRA (NRTS) Additional metrics are designed to capture the technology and education focus of these awards. Specific metrics will include:

- The number of HBCU's, OMU's, and public schools connected to the Internet
- The number of faculty, teachers, and students trained to utilize the Internet to enhance research and educational outcomes

Continuous assessment of performance through annual evaluations of individual awards and the collection of uniform outcomes across all research and education programs will clearly indicate the impact of NASA MUREP on the scientific and technological base for NASA and the Nation, while minimizing the reporting burden on award recipients.

ACCOMPLISHMENTS AND PROPOSED RESULTS

NASA's MUREP investment in MI's for FY 1999 achieved the following:

1. Funding reached 21 states, the District of Columbia, and Puerto Rico.
2. The number of new competitively peer-reviewed and merit selected MUREP awards totaled 61 in FY 1999.
3. 42 HBCU's were the direct recipients of 209 research and education awards valued at $34.2M.
4. 59 OMU's received 150 awards valued at $19.9M.
   - 34 HSI's received 88 awards valued at $12.5M
   - 7 TCU's received 10 awards valued at $1.1M
   - 20 awards to other institutions of higher learning
   - 13 awards to non-universities such as American Association for the Advancement of Science, National Association for Equal Opportunity in Higher Education, National Action Council for Minorities in Engineering, Hispanic Association of Colleges and Universities

5. Described below are the accomplishments of the Research Measures of Performance and the Education and Training Measures of Performance. The outcomes reported for FY 1999 (reporting period Academic Year 1998-99 and Summer 1999) show great achievements for underrepresented and underserved students, teachers, and faculty.

Research Measures of Performance Accomplishments. The participants included 397 faculty members, 118 research associates, 35 postdoctoral fellows, 804 undergraduates, and 488 graduates. The MI's were able to leverage their NASA MUREP funding of $27 million to an additional $31 million in research support ($8.8 million from other NASA programs and $22 million from other agencies). Technology transfer activities included 53 patents disclosed, applied for, or awarded and 30 commercial products being developed or marketed. A major goal of MUREP is to increase the number of socially and economically disadvantaged and disabled students receiving advanced degrees and entering into careers in NASA-related fields. Of the 1,292 students involved in these research projects during the reporting period, 804 (62%) participated at the bachelor's degree level, 363 (28%) participated at the master's degree level, and 125 (10%) participated at the doctoral degree level. During the reporting period, 408 students obtained degrees; 275 bachelor's degrees; 110 master's degrees; and 23 doctoral degrees.

Education and Training Measures of Performance Accomplishments. There were 207 MUREP education and training projects conducted at MI's. The programs include precollege and bridge programs, education partnerships with other universities, industry and nonprofit organizations, NRTS, teacher training, and graduate and undergraduate programs. These programs reached a total of 85,529 participants, with the predominant number at the precollege level. The programs achieved major goals of heightening students' interest and awareness of career opportunities in MSET fields and exposing students to the NASA mission, research and advanced technology through role models, mentors, and participation in research. Formats included Saturday Academies, after school classes, visits to NASA Centers and other scientific and technical industries, museums, hands-on science experiments, and computer training. Grantees reported that 32,087 high school students participated in NASA programs and 7,138 high school students selected college preparatory MSET courses. There were 4,901 high school graduates and 191 bridge students (high school graduates) in NASA programs. Enrolled in college were 945 students, of which 485 selected MSET majors. There were 100 students who successfully completed the freshman year. For the teacher programs, 3,047 teachers participated and 571 teachers received certificates. For undergraduate student programs, 8,242 students participated, 1,326 received degrees, and 197 are employed in a NASA-related field. There were 786 graduate students participating in graduate programs, 180 received degrees, and 49 became employed in a NASA-related field. There were 94 papers published, 65 of which were authored or co-authored by students. There were 59 presentations given at NASA Centers/JPL and 164 presentations at national or international conferences.

• **NASA Strategic Enterprises Involvement with HBCUs and OMUs** continued in FY 1999. The Enterprises invested $28.8M in URC's, IRA's, and other programs and activities at MI's and other educational organizations. The URC awards create a broad-based, competitive aerospace research capability within MI's. This capability fosters new aerospace science and technology concepts; expands the Nation's base for aerospace research and development; and develops mechanisms for increased participation by MI faculty and students into mainstream research. The IRA's and Partnership Awards improve academic, scientific and technology infrastructure. Other initiatives are focused on enhancing diversity and on exposing under-served schools, with significant enrollments of minority students, to Strategic Enterprises' research efforts and educational programs and activities.

• **Summary.** In FY 2000 and FY 2001, NASA MUREP will continue to focus on its goals and strategies to integrate mission-focused research, technology transfer, and education at HBCU's and OMU's. NASA will emphasize partnership awards that leverage NASA's investment by encouraging collaboration among NASA, HBCUs, OMUs and other university researchers and educators, and the aerospace industry. Plans for new awards in FY 2000 include IRA's, PI's, and Math and Science. In FY 2001, new SEMAA sites will be selected through a competitive peer review process. The NASA Strategic Enterprises will become more involved in competitive peer review, merit selection, and oversight of nationally solicited educational and research awards to HBCU's and OMU's managed through NASA Centers and JPL.

BASIS OF FY 2001 FUNDING REQUIREMENT

HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

	FY 1999 OPLAN 12/23/99	FY 2000 OPLAN REVISED	FY 2001 PRES BUDGET
	(Thousands of Dollars)		
Historically Black Colleges and Universities	36,200	35,871	28,000
University Research Center Awards			
Institutional Research Awards	300	1,500	1,500
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Partnership Awards	12,500	8,577	6,900
Enterprise Program Funding *	[17,200]	[17,200]	[20,900]

PROGRAM GOALS

NASA's HBCU program is responsive to Executive Order12876, which requires all Federal agencies to strengthen the capacity of HBCU's to provide quality education and to participate in and benefit from Federal programs. The primary goal of NASA's HBCU program is to enhance institutional infrastructure in NASA-related areas and to provide technical assistance to facilitate planning, development, and the use of new technologies that will ensure the long-term viability and educational outcomes of HBCU's in areas strategic to NASA's mission.

STRATEGY FOR ACHIEVING GOALS

HBCU's were involved in NASA's mission before man set foot on the Moon in 1969. In 1980, President Jimmy Carter signed Executive Order 12232 which established a Federal program "...to strengthen and expand the capacity of HBCU's to provide quality education." Executive Orders issued by Presidents Ronald Reagan and George Bush strengthened this program. NASA's current initiatives for HBCU's are based on two recent Executive Orders. Executive Order12876, signed November 1, 1993, by President William J. Clinton, mandates that agencies "...advance the development of human potential, to strengthen the capacity of HBCU's to participate in and benefit from Federal programs to achieve an increase in the participation by HBCU's in Federal programs." Executive Order12928, signed February 16, 1994, by President Clinton, directs Federal agencies to promote procurement with "...Historically Black Colleges and Minority Institutions." NASA employs a comprehensive strategy to accomplish the HBCU program goals.

ACCOMPLISHMENTS AND PROPOSED RESULTS

As a result of NASA's FY 1999 investment in HBCU's, 42 HBCU's were the recipient of 209 awards which reached more than 36,750 faculty, teachers, and students. The FY 2001 budget estimate includes funding to continue HBCU involvement in all five award categories. Specific accomplishments for each of the categories are as follows:

HBCU FY 1999 Accomplishments	University Research Centers	Principal Investigators	Partnership Awards
Research Population Supported:	517	342	331
Faculty Members	133	55	78
Research Associates	32	25	14
Postdoctoral Fellows	6	3	79
Bachelor's-degree Level Students	198	192	183
Master's-degree Level Students	103	61	35
Doctoral-degree Level Students	45	6	12
Degrees Awarded:	112	86	439
Bachelor's Degrees	62	66	29
Master's Degrees	41	169	10
Doctoral Degrees	9	1	0
% Socially/Economically Disadvantaged or Disabled	96%	84%	88%
Research Accomplishments:			
Refereed Papers or Book Chapters:			
Published	222	48	40
Student (Co) Authors to above	127	23	30
Accepted for Publication	67	20	28
Student (Co) Authors to above	21	12	26
Technical Presentations:			
Total Presentations	333	173	9114
Presentations given by Students	77	61	21
Leverage Achieved (in $M):			
Funding Provided by MUREP	$11.0	$3.0	$3.5
Leverage from Other NASA Programs	$5.3	$1.2	$0.6
Leverage from Other Agencies	$8.9	$2.4	$2.0
Technology Transfer Activities:			
Patents disclosed, applied for, or awarded	5	5	15
Commercial products being developed or marketed	6	58	7
Grant Awards Reporting	11	53	22

HBCU University Research Centers (URC) Awards

Eleven HBCU URC's were established by the Headquarters Office of Space Science (OSS), Office of Aero Space Technology (OAST), Office of Space Flight (OSF), Office of Life & Microgravity Sciences & Applications (OLMSA), Office of Earth Science (OES), and the Office of Equal Opportunity Programs (OEOP). Funding is provided in two stages and the capability of the university determines the amount. In the first stage, more funding is provided to establish a research infrastructure capable of sustaining long-term success in their research and education efforts (up to $2M per university). The funding is reduced in the second stage (not to exceed $1M per university) to recognize and encourage the movement of the URC's towards self-sufficiency through other funding sources. Funding for the following HBCU URC's is provided by the Strategic Enterprises.

University	Research Focus	Enterprises	Lead Center
Clark Atlanta	High Performance Polymers and Composites Research	OAST	GRC
Fisk	Photonic Materials and Devices	OSS	MSFC
Florida A&M	Nonlinear and Nonequilibrium Aeroscience	OAST	LaRC
Hampton	Optical Physics	OSS, OES	LaRC
Howard	Study of Terrestrial and Extraterrestrial Atmospheres	OSS, OES	GSFC
NC A&T State	Aerospace Research	OAST	LaRC
Tuskegee	Food and Environmental Systems for Human Exploration of Space	OAST	JSC
Alabama A&M	Hydrology, Soil Climatology, and Remote Sensing	OES	MSFC
Morehouse School of Medicine	Space Medicine and Life Sciences	OLMSA	JSC
Prairie View A&M	Applied Radiation Research	OSF	JSC
Tennessee State	Automated Space Science	OSS	GSFC

HBCU Institutional Research Awards (IRA)

In FY 1999, 5 HBCU's received renewal awards for IRA (NRTS) from the OES and OSS. These lead NRTS are part of a network that encompasses seven regions that cover the 50 states, Puerto Rico ,and the Virgin Islands. GSFC is the Lead Center for the IRA NRTS Program. The lead NRTS universities are: Prairie View A&M, Elizabeth City State, Morgan State, South Carolina State, and Tennessee State.

In FY 2000, OES and OSS will continue funding for the 5 HBCU IRA (NRTS) to bring advanced computer networking infrastructure and technologies to other institutions of higher education and schools with substantial enrollments of socially and economically disadvantaged and/or disabled students in their regions. These institutions are responsible for information dissemination sites, development of faculty and student network skills, and user working groups. In FY 2000, HBCU's will be invited to participate in the IRA (Research) program for the first time. The IRA (Research) goals include: (1) strengthening and improving core research areas of significance to the NASA mission; (2) increasing the number of students (who are U.S. citizens) conducting space research and working in NASA-related disciplines; (3) strengthening the research environment of eligible institutions and the capability of individuals by supporting the institutional infrastructure (through the acquisition of research equipment), faculty research, and disadvantaged undergraduate and graduate student researchers; and (4) encouraging technology transfer to the market place and to minority communities. To achieve these objectives, an Agency-wide TRC is assigned to each of the selected IRA (Research) award recipient and is responsible for providing technical guidance. NASA promotes collaboration between its funded IRA institutions, the Centers/JPL, and with entities outside of NASA. Institutions are encouraged to seek funding through NASA's traditional

opportunities, as well as other government agencies and private sources to promote future sustainability. IRA awards require substantial undergraduate and graduate student involvement in research projects.

In FY 2000, OAST and OSS will provide funding in the amounts of $500K and $122K respectively for the new IRA (Research) Awards. In FY 2001, OES and OSS will continue funding the 5 HBCU IRA (NRTS), and in FY 2001 OAST and OSS will provide funding similar to that of FY 2000 for the new IRA (Research) Awards.

HBCU Principal Investigator (PI) Awards

The PI Awards for Research are composed of MUREP solicited (also known as Faculty Awards for Research or FAR) and unsolicited (or Other Research and Technology) awards. FAR grants provide for research and student support and exposure to the NASA peer review process to enable them to demonstrate creativity, productivity, and future promise in the transition to achieving competitive awards in the Agency's mainstream research activities. The number of unsolicited awards depends on funding provided to MUREP, with the priority being on FAR awards. The majority of HBCU research is funded through competitive peer review and merit selection processes to enhance opportunities for participation in the Agency's mainstream research capabilities. Additionally, the pool of socially and economically disadvantaged students with research experience and interest in pursuing advanced MSET degrees in the fields of science, engineering, and mathematics will increase through faculty support.

In FY 1999, funding was provided for 14 third-year awards, 22 second-year awards, and 11 first-year awards. In FY 2000, funding is available for 22 third-year awards, 11 second-year awards, and 10 new FAR awards. In FY 2001 funding will be provided for 11 third-year awards and 10 second-year awards.

HBCU Math and Science Education Awards

The Math and Science Education Awards are composed of unsolicited awards and awards made based on solicitations. Primary funding supports the following four focus areas: undergraduate awards; graduate awards; precollege awards; and teacher enhancement and preparation awards.

During the FY 1999 reporting period (Academic Year 1998–99 and Summer 1999), 98 MUREP education and training projects were conducted at HBCU institutions. The programs included precollege and bridge programs, education partnerships with other universities, industry and nonprofit organizations, NRTS, teacher training, and graduate fellows and/or undergraduate programs. These programs reached a total of 35,651 participants, with the predominant number at the precollege level. The programs achieved major goals of (1) heightening students' interest and awareness of career opportunities in MSET fields, and (2) exposing students to the NASA mission, research and advanced technology through role models, mentors, and participation in research and other educational activities. Grantees reported 11,740 high school students in NASA programs and 1,144 high school students selected college preparatory MSET courses. There were 416 high school graduates, 337 enrolled in college, and 61 selected MSET majors. There were 111 high school graduates (bridge students) in NASA programs and 54 students who successfully completed their freshman year. There were 1,736 teachers in teacher programs and 320 teachers received certificates. For undergraduate student programs, 711 students participated, 193 received degrees, 22 are employed in a NASA-related field. There were 98 graduate students reported in the survey, 12 received degrees, and 5 are employed in a NASA-related field. There were 34 papers published, 5 of which were authored or co-authored by students. There were 22 presentations given at NASA Centers and 77 presentations at national and international conferences.

The FY 2000 Appropriations Bill for VA-HUD-Independent Agencies provided additional funding for NASA to make awards to Morgan State University ($1.6M), Texas College ($1.0M), and Spelman College ($1.0M). The across-the-board, .038 percent rescission resulted in these additional amounts being decreased as follows: $1.464M to Morgan State University, $0.915M to Texas College, and $0.915M to Spelman College. In FY 2000, funding was provided for 3 third-year and 5 second-year MASTAP awards and 11 third-year and 11 second-year PACE awards. New HBCU MASTAP and new PACE awards will be selected to replace expiring awards. In FY 2001, funding will be available for the second-year MASTAP and PACE awards selected in FY 2000, for 5 third-year MASTAP awards, and for 11 third-year PACE awards.

Additionally, in an effort to be responsive to Congressional direction to "strengthen graduate science, mathematics, engineering, and technology education at HBCU's" and to address the severe under representation of African-Americans at the doctoral level, NASA will begin a 5-year pilot graduate fellowship program at HBCU's in FY 2000. The program will be continued in FY 2001.

HBCU Partnership Awards

In FY 1999, 42 Partnership Awards for Innovative and Unique Education and Research (IUER) Projects were competitively awarded to HBCU's in 11 states and the District of Columbia. Four Partnership Awards for the Integration of Research into Undergraduate Education (PAIR) were continued for the second year of the five-year awards.

The FY 2000 Appropriation Bill for VA-HUD-Independent Agencies provided additional funding of $5.0M for Partnership Awards. The across-the-board, 0.38 percent rescission resulted in this amount being decreased to $4.577M. In FY 2000, the 42 Partnership (IUER) Awards will receive second-year funding, the 4 PAIR Awards will receive third-year funding, and new PAIR Awards will be made. In FY 2001 the 4 PAIR Awards (selected in FY 1999) will receive the fourth year of funding and the new PAIR Awards (selected in FY 2000) will receive second-year funding. In FY 2001, each NASA Strategic Enterprise will become more involved in Partnership Awards made through Centers.

NASA Strategic Enterprises Involvement with HBCUs

For the first time, in FY 1999, the Strategic Enterprises' funds were applied to education awards as well as research awards. In collaboration with OEOP, the Office of Earth Science (OES) solicited proposals from a broad range of education and research professionals to develop and implement Earth System Science (air, land, water, and life interactions) Education Programs targeted for kindergarten through postdoctoral levels. As a result, in FY 1999, OES made an initial investment of $292K in two HBCU's for 3 three-year awards. In FY 2000 and FY 2001, OES's investment will be $275K and $279K, respectively. OES will also contribute $122K to new Partnership Awards (PAIR) to be selected in FY 2000 and will provide similar support in FY 2001. In FY 2000, the Office of Space Science (OSS) and OEOP will jointly sponsor a new initiative in space science to competitively award, for up to three years, grants for education and research proposals to MI's. The goals of the education and research program are: (1) the development of space science-related academic capabilities and programs at MI's; and (2) the enhancement/development of faculty and students in space science-related fields at MI's through the establishment of partnerships and exchange programs in research and education with NASA-supported space science research groups. The amount of each award will be between $50K and $250K. The HBCU funding for FY 2000 is $1.5M. In FY 2001, similar funding will be provided for the second year of the three-year grants.

In FY 2001, OEOP will provide $250K to support HBCU's participation in the OES University Earth System Science (UNESS) Project. These funds are to be used to facilitate the significant and meaningful participation of HBCU's and OMU's in the UNESS Project. After selections for the UNESS Project are made, OEOP will evaluate the selected proposals to determine the degree to which the proposal meets the requirements of increasing the capabilities of HBCU's and OMU's to participate in earth science/applications mission. After a determination is made, funding will be made available for HBCU's participation in the concept study phase.

BASIS OF FY 2001 FUNDING REQUIREMENT

OTHER MINORITY UNIVERSITIES

	FY 1999 OPLAN 12/23/99	FY 2000 OPLAN REVISED	FY 2001 PRES BUDGET
	(Thousands of Dollars)		
Other Minority Universities	30,700	17,900	17,900
University Research Center Awards			
Institutional Research Awards	400		
Principal Investigator Awards	3,000	3,500	3,000
Math and Science Education Awards	18,100	11,300	12,300
Partnership Awards	9,200	3,100	2.600
Enterprise Program Funding *	[11,600]	[11,600]	[15,300]

PROGRAM GOALS

The primary goal of NASA's OMU program is to increase the opportunities for HSI's, TCU's, and educational organizations serving substantial numbers of people with disabilities to participate in and benefit from NASA's research and education programs.

STRATEGY FOR ACHIEVING GOALS

NASA established the OMU program per P. L. 98-371, House Report 98-803, and Senate Report 98-506 to "...review institutions of higher learning having significant minority enrollments to find ways to build closer relations with such schools, meet NASA's research objectives and increase the number of individuals from underrepresented groups in the pool of graduate researchers ...build a closer relationship with institutions serving significant numbers of minorities. In addition, Executive Order12900 (February 22, 1994) mandated that agencies increase Hispanic American participation in Federal education programs where Hispanic Americans currently are under served; Executive Order12928 (September 16, 1994) directed Federal agencies to promote procurement with "...Historically Black Colleges and Minority Institutions;" and P.L. 103-327 directed the establishment of URC's at the HSI's. Executive Order 13021(October 19, 1996) directed Federal agencies and departments to strengthen their relationships with Tribal Colleges and Universities. In response, NASA is developing a 5-year plan of action and submitted it first annual accomplishment reports to the White House Initiative Office for Tribal Colleges. Present awards to TCU's are encouraged within the five programmatic awards.

Although similar to the HBCU Program strategies and because of the differences in the evolution of MI's and the particularities of Federal mandates for HBCU's and Hispanic Americans, NASA's approach and implementation plan have been adjusted to incorporate these factors. For example, the Federal mandate for Hispanic Americans directs Federal agencies to "....improve educational outcomes for Hispanic Americans participating in Federal education programs...". As a result, the Agency has placed greater emphasis on mathematics and

science awards than on institutional research awards.

ACCOMPLISHMENTS AND PROPOSED RESULTS

As a result of NASA's FY 1999 investment in OMU's, 54 OMU's were the recipient of 109 awards which reached more than 50,560 faculty, teachers, and students. Specific accomplishments for each of the categories are as follows:

OMU FY 1999 Accomplishments	University Research Centers	Institutional Research Awards	Principal Investigators	Partnership Awards
Research Population Supported:	233	219	174	26
Faculty Members	44	48	33	6
Research Associates	9	27	8	3
Postdoctoral Fellows	4	6	6	1
Bachelor's-degree Level Students	65	78	81	7
Master's-degree Level Students	95	31	33	5
Doctoral-degree Level Students	16	29	13	4
Degrees Awarded:	72	38	49	12
Bachelor's Degrees	47	28	35	8
Master's Degrees	20	6	11	3
Doctoral Degrees	5	4	3	1
% Socially/Economically Disadvantaged or Disabled	94%	89%	71%	75%
Research Accomplishments:				
Refereed Papers or Book Chapters:				
Published	153	68	22	8
Student (Co) Authors to above	68	34	17	0
Accepted for Publication	78	44	8	3
Student (Co) Authors to above	10	33	6	12
Technical Presentations:				
Total Presentations	186	124	64	19
Presentations given by Students	86	37	27	5
Leverage Achieved (in $M):				
Funding Provided by MUREP	$3.2	$3.9	$1.7	$0.4
Leverage from Other NASA Programs	$0.1	$1.2	$0.5	
Leverage from Other Agencies	$4.1	$3.1	$1.2	$0.4
Technology Transfer Activities:				
Patents disclosed, applied for, or awarded	13	12	2	1
Commercial products being developed or marketed	4	3	2	
Grant Awards Reporting	3	5	24	3

OMU University Research Centers (URC)

Three OMU URC Awards were established by the Headquarters Office of Space Science (OSS), Office of Aero Space Technology (OAST), Office of Space Flight (OSF), Office of Earth Science (OES), and Office of Equal Opportunity Programs (OEOP). Funding for the following OMU URC's is provided by the Strategic Enterprises.

University	Research Focus	Enterprises	Lead Center
New Mexico	Autonomous Control Engineering	OAST	ARC
Texas at El Paso	Pan American Center for Earth and Environmental Studies	OES	GSFC
Puerto Rico at Mayaguez	Tropical Center for Earth and Space Sciences	OSS, OES	GSFC

OMU Institutional Research Awards (IRA)

The IRA (Research) goals include: (1) strengthening and improving core research areas of significance to the NASA mission; (2) increasing the number of students who are U.S. citizens conducting space research and working in NASA-related disciplines; (3) strengthening the research environment of eligible institutions and the capability of individuals by supporting the institutional infrastructure (through the acquisition of research equipment), faculty research, and disadvantaged undergraduate and graduate student researchers; and (4) encouraging technology transfer to the market place and to minority communities. To achieve these objectives, an Agency-wide TRC is assigned to each of the selected IRA (Research) award recipients and is responsible for providing technical guidance. The IRA (NRTS) grants offer advanced computer networking infrastructure and technologies to other institutions of higher education and schools with substantial enrollments of socially and economically disadvantaged and/or disabled students in their regions. These institutions are responsible for information dissemination sites, development of faculty and student network skills, and user working groups. NASA promotes collaboration between its funded IRA institutions, the Centers/JPL, and with entities outside of NASA. Institutions are encouraged to seek funding through NASA's traditional opportunities, as well as other government agencies and private sources to promote future sustainability. IRA awards require substantial undergraduate and graduate student involvement in research projects.

In FY 1999, renewal awards were granted to 5 OMU IRA (Research) and 2 OMU IRA (NRTS). In FY 2000 and FY 2001, OSS, OES, and OAST will continue funding for the 5 IRA (Research) and the 2 IRA (NRTS), as follows:

University	Research Focus	Enterprises	Lead Center
IRA (Research):			
California State-Los Angeles	Use of Decentralized Control in Design of a Large Segmented Space Reflector	OSS	JPL
Florida International	High Performance Database Management with Application to Earth Sciences	OES	GSFC
Puerto Rica at Rio Piedras	Land Management in the Tropics and its Effects on the Global Environment	OES	MSFC
City College of New York	Tunable Solid State Laser and Optical Imaging	OAST	LaRC
New Mexico Highlands	Alliance for Nonlinear Optics	OAST	MSFC
IRA (NRTS):			
City College of New York	Urban Collaboration for Network Connectivity and Internet Access	OSS, OES	GSFC
Texas at El Paso	Network Resources Training Sites	OSS	GSFC

In FY 2000, OAST and OSS will participate in the selection of new IRA (Research) Awards and will provide OMU funding of $400k and $657K, respectively. FY 2001, OAST and OSS will provide similar funding for the new IRA (Research) Awards.

OMU Principal Investigator (PI) Awards

The PI Awards for Research are composed of MUREP solicited (also known as Faculty Awards for Research or FAR) and unsolicited (or Other Research and Technology) awards. FAR grants provide for research and student support and exposure to the NASA peer review process to enable them to demonstrate creativity, productivity, and future promise in the transition to achieving competitive awards in the Agency's mainstream research activities. The number of unsolicited awards depends on funding provided to MUREP, with the priority being on FAR awards. Through the competitive process for awards, opportunities for participation in the Agency's mainstream research will expand as recipients' research capabilities are enhanced through interaction with NASA researchers and faculty. Additionally, the pool of disadvantaged students with research experience and interest in pursuing advanced degrees in the fields of science, engineering, and mathematics will increase through faculty support.

In FY 1999, funding for 4 third-year, 16 second-year and 7 new FAR awards was provided. In FY 2000, funding will be provided for 16 third-year, 7 second-year, and 10 new FAR awards. In FY 2001, funding will be provided for10 second-year awards and 7 third-year awards.

OMU Math and Science Education Awards

The Math and Science Education Awards are composed of unsolicited awards and awards made based on solicitations. Primary funding supports the following four focus areas: undergraduate awards; graduate awards; precollege awards; and teacher enhancement and preparation awards.

During the FY 1999 reporting period (Academic Year 1998–99 and Summer 1999), 109 MUREP education and training projects were conducted at OMU institutions. The institutions conducted precollege and bridge programs, education partnerships with other universities and industry, NRTS, teacher training, and graduate and undergraduate programs. These programs reached a total of

49,914 participants, predominantly at the precollege level and achieved major goals of heightening students' interest and awareness of career opportunities in MSET fields, and exposing students to the NASA mission, research and advanced technology through role models, mentors, and participation in research and other educational activities. In FY 1999, NASA continued a very meaningful relationship with the Hispanic Association of Colleges and Universities (HACU) through Proyecto Access, a consortium through which HACU linked eight HSI's together to conduct 8-week MSET summer programs. Grantees reported 20,347 high school students in NASA programs and 5,994 high school students selected college preparatory MSET courses. There were 4,485 high school graduates, 608 enrolled in college, and 424 who selected MSET majors. There were 90 high school graduates (bridge students) in NASA programs and 46 students successfully completed the freshman year. There were 1,311 teachers in teacher programs and 251 teachers received certificates. There were 7,531 undergraduate students; 1,133 received undergraduate degrees; and 175 are employed in a NASA-related field. There were 688 graduate participants; 168 received graduate degrees; and 44 are employed in a NASA-related field. There were 60 papers published, all of which were authored or co-authored by students. There were 37 presentations given at NASA Installations and 87 presentations given at national and international conferences. In FY 1999, the OMU MASTAP's continued to contribute to the National Education Goals by enhancing the ability of pre-service and in-service teachers to teach mathematics and science in schools under served by NASA. This was achieved through the development of special courses, curricula, instructional models, publications, presentation of academic papers, and teacher certifications. Pre-service teachers gained valuable classroom experience while at the same time providing extra attention to students in schools with large numbers of disadvantaged students. In the process, several teachers completed master's degrees. These programs have had a positive impact on both the universities that implement them and on the school districts with which they have partnered. Effective and innovative instructional materials, curricula, and models developed by MASTAP programs are distributed to a broad audience. In FY 1999, additional funding of $10M was included in the FY 1999 Appropriation Bill for VA-HUD-Independent agencies for the Science, Engineering, Mathematics and Aerospace Academy (SEMAA) to replicate the training provided to other sites. The three components are as follows: (1) Living In Space for the K - 4th graders has classes for both students and parents to institutionalize math and science in the home; (2) Exploring the Solar System for 5th - 8th graders increases their awareness of MSET skills and the use of laboratory equipment; (3) Discovering Aeronautics for 9th-12th graders was developed to be used with Glenn Research Center or the Mobile Aeronautics Education Lab when available. FY 1999 funds will continue the program through FY 2000.

In FY 2000, funding will be available for one third-year and 4 second-year MASTAP awards and 5 third-year and 5 second-year PACE awards. In FY 2000, new MASTAP and new PACE awards will be selected. In FY 2001, funding will be provided for 4 third-year MASTAP Awards, second-year MASTAP awards (selected in FY 2000), 5 third-year PACE Awards, and second-year PACE awards (selected in FY 2000).

OMU Partnership Awards

In FY 1999, 30 new Partnership Awards for Innovative and Unique Education and Research (IUER) Projects were competitively awarded to OMU's in 8 states. Three new Partnership Awards for the Integration of Research into Undergraduate Education (PAIR) were continued for the second year of the five-year awards. In FY 2000, the 30 Partnership Awards will receive second-year funding, and the three PAIR Awards will receive third-year funding. In FY 2001, the 3 PAIR Awards (selected in FY 1999) will receive fourth-year funding and the three PAIR Awards (selected in FY 2000) will receive second-year funding.

For the first time, in FY 1999, several Strategic Enterprises ' funds were applied to education awards as well as research awards. In collaboration with OEOP, the Office of Earth Science (OES) solicited proposals from a broad range of education and research professionals to develop and implement Earth System Science (air, land, water, and life interactions) Education Programs targeted for kindergarten through postdoctoral levels. In FY 1999, OES made an initial investment of $108K in two OMU's for 2 three-year

awards. In FY 2000 and FY 2001, OES's investment will continue at $108K each year. The Office of Space Science (OSS) will provide $1.5M to an education initiative for OMU Partnerships and $400K for OMU Partnerships (PAIR) to be selected in FY 2000. The Office of Aero Space Technology (OAST) will provide $423K for OMU Partnerships (PAIR) to be selected in FY 2000. Similar support of these awards will continue in FY 2001. In FY 2000, the Office of Space Science (OSS) and OEOP will jointly sponsor a new initiative in space science to competitively award, for up to three years, grants for education and research proposals to MI's. The goals of the education and research program are: (1) the development of space science-related academic capabilities and programs at MI's; and (2) the enhancement/development of faculty and students in space science-related fields at MI's through the establishment of partnerships and exchange programs in research and education with NASA-supported space science research groups. The amount of each award will be between $50K and $250K. The OMU funding for FY 2000 is $1.5M. In FY 2001, funding will be provided for the second year of the three-year grants.

In FY 2001, OEOP will provide $250K to support HBCU's participation in the OES University Earth System Science (UNESS) Project. These funds are to be used to facilitate the significant and meaningful participation of HBCU's and OMU's in the UNESS Project. After selections for the UNESS Project are made, OEOP will evaluate the selected proposals to determine the degree to which the proposal meets the requirements of increasing the capabilities of HBCU's and OMU's to participate in earth science/applications mission. After a determination is made, funding will be made available for HBCU's participation in the concept study phase. Also in FY 2001, each NASA Strategic Enterprise will become more involved in Partnership Awards made through Centers.